REVIEWS

Robbins's The Botany of Crop Plants*

This book contains a mass of information concerning tropical as well as temperate forms, and cannot help but prove invaluable to students and teachers in agricultural schools and colleges, to workers in agricultural experiment stations, and to all persons interested in cultivated plants. While the book is, in the nature of the case, largely a compilation, the author has apparently made the subject-matter his own. The treatment is concise, as complete as should be expected, and about as interesting as such material can well be made. The author intends the work as a textbook, and Part II, which treats the economic plants by families, is deemed by him sufficient for a course of one half year, involving one recitation and two laboratory periods per week.

In the preparation of the book, the author has had in mind non-agricultural as well as agricultural schools, for, he says (p. v), "it cannot escape notice that there is a growing tendency, wherever botany is taught, to tie it up more closely with economic interests." Undoubtedly this is so, but the reviewer cannot but consider that it would be pedagogically and scientifically unfortunate for a student to get his conception of the nature and scope of botany as a science from any specialized treatment of only one group of plants. Such a course has too great limitations to be adequate for purposes of general culture, or as an introduction to the methods and scope of botanical science. In other words, it would seem to the reviewer unfortunate for students in agricultural colleges to be introduced to botanical science by such a course in applied botany as is presented in the book under review, or any other book of similar scope and aim. This view appears also to be in harmony with that of the author.

As the author suggests in his preface, the use of his Part II will, in most schools, be preceded by a general course, aiming "to give the student a survey of the plant kingdom and an acquaintance with the large outstanding facts and principles of botany."

* Robbins, Wilfred, W., The Botany of Crop Plants, pp. i–xix + 681, Figs. 263, Philadelphia, P. Blakiston's Son & Co. $2.00 net.

No class of students are more in need of such a survey and acquaintance than are those in our agricultural schools and colleges. It may not be essential to being a farmer, but the aim should not be to make the graduates of our agricultural colleges merely farmers, nor merely good farmers.

The reviewer has made running notes as follows:

On page 9 protoplasm is described as "a very complex chemical substance," but the tabular analysis of a unit of protoplasm on the opposite page gives the more nearly correct impression of protoplasm as a complex physical system, comprising many chemical compounds.

Chapter IV, Stems, seems specially clear and satisfactory.

The statement (p. 46) that "carbohydrates are made . . . only by those cells of green plants that possess chlorophyll" should be qualified. All cells make cellulose, and many classes of non-chlorophyll-bearing cells manufacture sugar from starch. The non-green cells of the potato tuber (one example of thousands) normally make starch. The author doubtless refers to the primary elaboration of carbohydrates out of inorganic elements, but freshmen have not yet become such carping critics as reviewers, and might be misled by the statement as it stands.

The pollen tube does not always enter through the micropyle, even in cultivated plants (p. 52). The sperm nucleus does not contain paternal "characters," nor does the egg-nucleus contain maternal "characters," but only the determiners or genes of those characters (p. 52). The use of the term "embryo nucleus" for oösperm (oöspore, zygote) (p. 53) is unusual if not unique, and not accurate nor adequate. The use of the term "Pteridophytes" to include Calamophytes and Lepidophytes (pp. 62 and 64) is archaic, or rapidly becoming so. *Zea Mays* is correct, not *Zea mays* (p. 178).

Yellow sweet clover is not *Melilotus alba* (legend of Fig. 183, p. 435). This is obviously an oversight, for the author is elsewhere correct on this point.

The bibliographies at the end of each chapter will prove very helpful, and contain many citations to literature as late as 1917.

The book is a mine of information hitherto available only in

scattered sources, and the wonder is that the need for such a book in agricultural colleges was not met several years ago.

C. STUART GAGER.

Weaver's Study of the Vegetation of Southeastern Washington and Adjacent Idaho; and Ecological Studies in the Tension Zone between Prairie and Woodland, by Weaver and Thiel

After thirteen years of quiescence, a notable series of publications of the Botanical Seminar of the University of Nebraska has been revived by a new generation of ecologists and phytogeographers. The second paper noted above is number one of the new series of "Botanical Survey of Nebraska," the last of the old series being published in 1900 as the second edition of "Phytogeography of Nebraska I," originally issued in 1898.

Considering the last paper first, the authors show that in the tension zone between forest and prairie the lack of available water and high transpiration on the latter explains the failure of the trees to encroach seriously over the prairies, except in gullies and other favorable places where there is water. A system of records showing available water supply and transpiration, and the reflection of these factors in the vegetation itself, are described in detail, the whole paper covering 60 pages, with numerous pictures, tables and graphs to illustrate the points discussed. In this connection some of the conclusions of Gleason, Harper, Shimek and others should be studied by those who may not be inclined to ascribe as much importance to water as the authors of the paper under discussion evidently do. They make scarcely any mention of fire as a factor, whereas some writers consider it almost *the* factor. They promise, however, to carry out a series of "carefully planned quadrat studies" to answer the question "Can trees grow from seed sown in the prairie or worked into the surface soil and under what conditions?"

The other paper by Dr. Weaver is a pamphlet of 133 pages and 48 illustrations, and is a systematic description of the vegetation of southeastern Washington and eastern Idaho. That such a region contains vegetation described under prairie-plains formation, desert-scrub formation, Pacific coast forest formation, Hydrosere, etc., bears out the author's statement that the area